

His interests carried him into many problems concerned with plants, minerals, fossils, and other natural objects. In his investigation of plants Mr. Laudermilk was never satisfied with the statements in books. He went directly to nature and drew or wrote from what he found there. He was an excellent illustrator of books and scientific papers and a painter of ability. He wrote many popular articles presenting science and especially botany and geology as a layman would enjoy it, and in these he brought knowledge from many fields to bear on matters commonly approached by a single avenue. His illustrations and manuscripts found their way into such journals as *Natural History*, *Desert Magazine*, and *Westways*. His last work was the principal series of illustrations for the writer's textbook entitled "Plant Classification," scheduled to be published in February, 1957. Mr. Laudermilk clung to life for many months in the hope of seeing these illustrations in print, and it is a great regret to the author that he was not able to do so.—LYMAN BENSON, Department of Botany, Pomona College, Claremont, California.

ASTRAGALUS AGNICIDUS, A NEW LOCOWEED FROM HUMBOLDT COUNTY, CALIFORNIA

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The known history of the *Astragalus* described below goes back about twenty-five years, when Mr. Henry Tosten, the original discoverer, moved with his family to a ranch situated high in the outer North Coast Range near the divide between the South Fork of the Eel and the Mattole River in southern Humboldt County. Suffering great losses among his sheep, Mr. Tosten quickly identified this species as the culprit. In the summer of 1931 he prepared herbarium material and sent it to the late Mr. J. P. Tracy of Eureka, the outstanding authority on the flora of the region, and the specimens passed in due course to the University of California Herbarium at Berkeley, where I came across them in the winter of 1949. In May, 1954, I was able to visit the Tosten place and the genial owner obligingly took me up to the ridge above the ranch-house, the original station, where the locoweed still survived in sparing quantity. I am indebted to Mr. Tosten for the following information.

No sooner was the *Astragalus* recognized as poisonous than vigorous steps were taken to root it out. It was restricted to a wooded ridge, where the natural vegetation had been disturbed by logging, and was so abundant in early years that it was possible to collect great piles of stems for burning. Since then intermittent but never wholly successful attempts were made to control or exterminate it, and plans were afoot in 1954 to clear off the hilltop and plough it out. Mr. Tosten early assumed that the plant was an introduced weed; and it is said to be unknown to other ranchers in the community or county. A company of bark-strippers was

encamped on the site for some years before the Tosten occupancy, and this circumstance lends color to the view that it might have been brought in accidentally, possibly, as suggested by Mr. Tosten, from the Sacramento Valley. Yet it can be stated emphatically that it is not any species as yet recognized or described from the Americas. All attempts to identify the specimens with some Old World species having proved vain, I am forced to conclude that, in spite of its weedy occurrence, it is most probably native to California and requires a name.

The native status of *A. agnicidus* finds considerable support when we consider its probable relationships. It appears not to fit easily into any group described from Europe or Asia. On the typesheet Mr. Tracy remarked, in my opinion correctly, that it was near *A. umbraticus* Sheld., but differed in the pubescence and the pods. While *A. agnicidus* and *A. umbraticus* are readily distinguished at the specific level, as shown in the key below, they are much alike in general facies and organization, and together with *A. Congdoni* Wats. and *A. Paysonii* (Rydb.) Barneby form a small but homogeneous and presumably natural group in the genus. Leading technical characters common to the four species are: free stipules; thin-textured, often visibly penninerved leaflets; nodding or declined flowers and fruits; white petals; and pods shortly stipitate or subsessile, continuous with the receptacle (and hence falling naturally with the disjoining pedicels), in form obliquely linear- or lance-oblong, more or less incurved, compressed-triquetrous, grooved dorsally and fully bilocular. The three species known hitherto are all rare or highly localized. *Astragalus Congdoni* is endemic to the cismontane foothills of the Sierra Nevada, where it ranges in disjunct and scattered stations from the Mokelumne south to the Tule River, and is seemingly confined to areas of old metamorphic, sometimes partly serpentized, bedrock. *Astragalus umbraticus* is known from only seven or eight stations, four of which lie in the Klamath Highland in southwest Oregon, on the Coquille, Rogue and Illinois rivers; from there it extends south to the lower Trinity River and Redwood Creek in Humboldt County, California; and it was collected long ago at an unspecified locality in the Coast Ranges of Yamhill County in northwest Oregon. The somewhat less closely related *A. Paysonii* is known as yet only from two records, one from the Snake-Green River divide in western Wyoming, the other at a point over three hundred miles distant to the northwest in the Clearwater Mountains of central Idaho. The distributional pattern of these species, considered individually and collectively, suggests that the section is a relatively old one, very likely composed of homogenic depleted species as defined by Stebbins (in *Madroño* 6:241-258, 1942). Stebbins has pointed out the alternative consequences of a change in environment on rare or relic species consisting of few biotypes: eventual extinction where the change is detrimental to their welfare, or regained vitality when conditions are altered to their advantage, or where competition is, even temporarily, reduced. It seems possible that disturbance of the highly competitive climax

woodland and the sudden weedy abundance of *A. agnicidus* are related phenomena. Further exploration of the more inaccessible parts of the North Coast Range may yet provide a definite answer.

The species discussed above may be distinguished by the following key:

1. Leaflets (except in a few early leaves) 15–35; flowers relatively large, the banner 9–16.5 mm., the keel 7–12.5 mm. long; cismontane Oregon and California.
2. Stems and herbage nearly glabrous, the few scattered hairs strictly appressed and not over 0.6 mm. long; ovary and pod glabrous; Coast Ranges, from Yamhill County, Oregon to central Humboldt County, California. Stipe of the pod 0.8–1.9 mm. long, the body 1.4–2.4 cm. long, 2.6–3.6 mm. in diameter, 10–15-ovulate *A. umbraticus*
2. Stems (at least above the base) and herbage villous or pilose, the longest hairs at least 0.9 mm. long; ovary and pod pubescent; southern Humboldt County and Sierra Nevada, California.
 3. Raceme compact and dense, the axis little-elongating, 2–4.5 cm. long in fruit; calyx-teeth linear or lance-acuminate, 3.3–5 mm. long; pod thinly villous-pilose, the stipe 0.3–0.4 mm., the body 11–15 mm. long, 3–3.4 mm. in diameter, 8–9-ovulate; Humboldt County..... *A. agnicidus*
 3. Raceme open, becoming loosely secund and mostly 5–20 cm. long in fruit; calyx-teeth subulate, 1–2.5 mm. long; pod more densely strigulose-villosulous, the stipe 1–2.5 mm., the body (1.5) 2–3.5 cm. long, 2.3–3.2 mm. in diameter, 23–29-ovulate; Sierra foothills..... *A. Congdoni*
1. Leaflets 7–15; flowers small, the banner about 7 mm., the keel about 5 mm. long; western Wyoming and central Idaho. Stipe of the pod 1–1.5 mm., the body 10–17 mm. long, 2.5–3.5 mm. in diameter, 8–10-ovulate..... *A. Paysonii*

***Astragalus agnicidus* sp. nov.** Herbae elatae foliosae e radice verticali ramosa perenni, pilis debilibus patulis subsinuosis rectisque parce villosae, foliis bicoloribus inferne pallidis ad nervum medianum barbatis, superne saturatius viridibus glabris, ciliatis, inflorescentia nigro-villosula; caules erecti et adscendentes fistulosi striati straminei (3) 4–9 dm. longi, ad medium ramosi vel subsimplices; stipulae membranaceae 4–15 mm. longae, imae ovato-triangulares amplexicaules inter se liberae, superiores lanceolato-acuminatae vel lineari-caudatae dimidium caulem amplectentes decurrentes deflexae; folia (3.5) 5–12 (16) cm. longa, superiora subsessilia, foliolis (6) 9–13-jugis petiolulatis ovato-vel lanceolato-oblongis obtusis vel emarginatis rarius acutiusculis mucronulatis (3) 5–22 mm. longis, majoribus penninerviis; pedunculi saepius 8–12 supra medium caulem emissi 5–13 cm. longi, folio subaequilongi; racemi dense (10) 15–40-flori, floribus mox patulo-declinatis, axi fructifero vix elongato (1) 2–4.5 cm. longo; bractee hyalinae lanceolatae vel lineari-caudatae 2–6 mm. longae reflexae; bracteolae minutae vel 0; calycis nigro-villosuli tubus campanulatus pallide membranaceus 3.2–4.2 mm. longus, 2.4–3 mm. latus, dentes firmiores virides lineares vel lineari-acuminati 3.3–4.9 mm. longi; petala alba immaculata; vexillum per 45° recurvum, oblanceolato-subrhombicum emarginatum, 9.1–11 mm. longum; alae 8.3–9.2 mm. longae, laminis oblanceolatis obtusis vel oblique obovatis emarginatis subrectis 5.4–6.5 mm. longis, 1.5–2.6 mm. latis; carina 7–7.4 mm. longa, laminis semi-obovatis 3.9–4.2 mm. longis, 2–2.4 mm. latis, per 90–95° in apicem obtusum deltoideum incurvis; legumen

patulo-declinatum subsessile, stipite vix 0.4 mm. longo calyce persistenti occultato, de visu laterali anguste lanceolatum paullo incurvum 11–15 mm. longum, 3–3.4 mm. latum, basi obtusum, apice in rostrum anguste triangulari-acuminatum cuspidatum angustatum, triquetro-compressum, sutura ventrali prominula concave arcuata carinatum, dorso anguste sulcatum, valvulis tenuibus piloso-villosulis demum chartaceis reticulatis stramineis, late inflexis, septo completo 1.5–2.2 mm. lato; ovula 8–9; semina (vix matura) brunnea laevia 1.7–2.1 mm. longa.

Astragalo umbratico Sheld. affinis, sed caulibus elatis, pube magis copiosa patula villosa multo longiori, dentibus calycinis elongatis, necnon legumine breviori villosulo 8–9 (nec 10–15)-ovulato summopere distincta.

The species name *agnicidus* is derived from *agnus*, lamb, and *caedere*, to kill; the species was first brought to notice by its reputedly poisonous qualities.

Specimens examined. CALIFORNIA. "Local on Tosten & Peirce Ranch, near Bear Buttes, 4 miles s. of Miranda, Humboldt County, alt. about 2500 ft., June 7, 1931, *Henry Tosten* ex herb. *J. P. Tracy*. Said to be a sheep poison and attempted to be eradicated, fall of 1931" (type, UC, two sheets, 502991, 502992). Topotypes: August 20, 1931, *J. C. Taris Jr.*, UC; May 19, 1954, just coming into flower, on brushy logged-over ridge, *Barneby 11570* (CAS, RSA, author's coll.).

Loan of the material at the Herbarium of the University of California, above cited, is hereby gratefully acknowledged.

Wappingers Falls, New York.

NOTES AND NEWS

ANEMOPSIS CALIFORNICA IN OREGON. An apparently well-established clump of *Anemopsis californica* was found in an roadside irrigation ditch, along Crystal Springs Road about one mile southwest of the bridge that crosses Lost River, Klamath Falls, Oregon, on August 15, 1955 (*Pengelly 743*). The plant was associated with cattails (*Typha*) and arrow-leaf (*Sagittaria*); however, the ditch passes through typical *Artemisia tridentata* association. This appears to be the first record of the occurrence of this species in Oregon, the nearest known locality to the south being near the mouth of the Sacramento River.—RUSSELL PENGELLY, Klamath Falls, Oregon.

Some publications of interest follow:

Responses of Vegetation to Fire, by James R. Sweeney. University of California Publications in Botany 28 (4): 143–250, pls. 12–27, 10 figs. in text. 1956. \$2.00. University of California Press, Berkeley 4, California. A study of the effects of chaparral fires upon herbaceous vegetation.

The Genus Clarkia, by Harlan Lewis and Margaret Ensign Lewis. University of California Publications in Botany 20 (4): 241–392, 28 figs. in text. 1955. \$2.00. University of California Press, Berkeley 4, California. A monograph of the genus based upon a many-faceted, biosystematic approach to the problem.

Variation and Genetic Relationships in the Whitlavia and Gymnobythus Phacelias, by George Willson Gillett. University of California Publications in Botany 28 (2): 19–78, pls. 3–5, 16 figs. in text. 1955. \$1.00. University of California Press, Berkeley 4, California. A genetic analysis and systematic treatment of two of the seven subgenera of the genus *Phacelia*.